<center>**REMARKS/ARGUMENTS**</center>

In the Office Action mailed May 14, 2008, claims 1-7, 9, and 10 were rejected. In response, Applicants hereby request reconsideration of the application in view of the amendments and the below-provided remarks.

For reference, claim 1 is amended and claims 13-22 are added. Claim 1 is amended to recite elements in programming the first and second programmable units. The amendment to claim 1 is supported by the illustrations in Figures 2 and 3, as well as the corresponding subject matter in the specification. Claim 13 is supported, for example, by Figure 1. Claims 14-19 are supported, for example by Figures 2-6. Claims 20-22 are also supported by the subject matter of the drawings and specification of the present application.

Claim Rejections under 35 U.S.C. 103

Claims 1-7, 9, and 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Koch et al. (U.S. Pat. Pub. No. 2002/0055979, hereinafter Koch) in view of Tang (U.S. Pat. No. 6,775,717, hereinafter Tang). However, Applicants respectfully submit that these claims are patentable over both Koch and Tang for the reasons provided below.

Independent Claim 1

Claim 1 recites "a first programmable unit coupled via the first external direct memory access channel to the first direct memory access unit, said first programmable unit being programmable by the first processor via a first processor interface" (emphasis added.

In contrast, Koch does not teach programming elements for a programmable unit. Koch merely teaches that an access unit 21 can be programmed by one core only. Koch, paragraph 47. In other words, Koch teaches an access unit which is programmed by an access unit core. Although, Koch teaches in paragraph 55 that the processor interface 72 has a data link 58 and a control link 59 for connection to the processor bus 50, Koch does not mention any programming link. Koch merely relies upon the processor interface to deliver data from the DMA unit to the processor bus. However, Koch does not teach

programming elements for programming the core. Additionally, Koch does not specifically teach a programming interface.

Tang also fails to teach programming elements and, in particular, a first programmable unit which is programmable by a first processor via a first processor interface. In fact, the Office Action does not rely on or assert Tang as teaching such programming. Therefore, the combination of Koch and Tang also fails to teach a first programmable unit being programmable by the first processor via a first processor interface.

Additionally, claim 1 recites "wherein the first programmable unit and the second programmable unit each comprises . . . a first external direct memory access channel interface on the first clock, and a second external direct memory access channel interface on the second clock" (emphasis added).

It should be noted that the Office Action recognizes that Koch does not explicitly teach a first programmable unit and a second programmable unit each having two external direct memory access channel interfaces. Hence, the Office Action relies on Tang as purportedly teaching a programmable unit having two external direct memory access channel interfaces.

However, Tang merely teaches a first interface and a second interface for a single processor and system on a common clock. Tang, Figure 9. Though the DMA controller taught by Tang has a main and a secondary state machine for controlling DMA channel interfaces, the DMA controller does not transfer data across channel interfaces between multiple CPUs and multiple shared units (Figure 9) on multiple clocks. Tang teaches arbitration and reduction in latency between the completion of a first data transfer of a first DMA channel interface and the set up of a second data transfer of a second DMA channel interface on the same bus and on the same clock. Tang, abstract. Therefore, it is not possible for Tang to have multiple DMA channel interfaces on multiple clock domains.

For the reasons presented above, the combination of cited references does not teach all of the limitations of claim 1 because the cited references do not teach programmable units each having multiple external DMA channel interfaces operating on multiple clocks. Additionally, the combination of Koch and Tang does not teach all of

the limitations of claim 1 because the cited references do not teach programmable units being programmable by respective processors via respective processor interfaces. Accordingly, Applicants respectfully assert claim 1 is patentable over the combination of cited references because the combination does not teach all of the limitations of claim 1.

New Claims 13-19

Claim 13 recites a system with multiple processor environments that operate on different clock frequencies and communicate over multiple bi-directional channels and multiple processor programming interfaces. In other words, claim 13 recites communication channels between programmable environments of different clock frequencies and different bus widths. Additionally, claim 13 recites a decoupling of the different processor clocks to make possible sharing a unit on one processor clock with a processor on a separate clock frequency.

Koch does not teach multiple bidirectional channels between two processor environments because Koch lacks a processor programming interface to programmable cores having multiple channels. Koch lacks programming links via processor interfaces, as explained above, and lacks multiple bi-directional channels. Tang does not teach programmable units with programming interfaces directly to the CPU. In fact, Tang does not teach any programming elements or programming interfaces because the synchronous system of Tang has a single clock frequency for all DMA operations. Therefore, claim 13 is patentable over the combination of Koch and Tang because neither Koch nor Tang teaches <u>programmable interfaces on cores that have multiple channels</u> to decouple two clock domains.

New claims 14-19 depend from and incorporate all of the limitations of the corresponding independent claim 13. Applicants respectfully assert these claims are allowable based on the allowable base claim 13. Claims 14-19 are also allowable for additional reasons, as follows. In particular, claims 14 and 15 are patentable over Koch and Tang because the combination of cited references does not teach multiple external DMA channel interfaces operating on multiple clocks. Claims 16 and 17 recite a common programmable unit which when coupled with the two DMA units depicted in Figure 5, which make up the two bi-directional channels of Figure 1. Claims 18 and 19

are patentable over Koch and Tang because the combination of cited references does not teach multiple masters on bi-directional channels communicating across multiple clock domains.

New Claims 20-22

Applicants respectfully assert independent claim 20 is patentable over Koch in view of Tang at least for similar reasons to those stated above in regards to independent claim 13.

Here, although the language of claim 20 differs from the language of claim 13, and the scope of claim 20 should be interpreted independently of claim 13, Applicants respectfully assert that the remarks provided above in regard to the patentability of independent claim 13 also apply to independent claim 20. Accordingly, Applicants respectfully assert claim 20 is patentable over the cited references because the cited references, either alone or in combination, do not teach the limitations of the claim.

Claims 21 and 22 depend from and incorporate all of the limitations of independent claim 20. Applicant respectfully asserts claims 21 and 22 are allowable based on allowable base claim 20.

CONCLUSION

Applicants respectfully request reconsideration of the claims in view of the amendments and remarks made herein. A notice of allowance is earnestly solicited.

Respectfully submitted,

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